(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 1 July 2004 (01.07.2004)

PCT

(10) International Publication Number WO 2004/055670 A3

(51) International Patent Classification?: 15/177

G06F 9/445,

(21) International Application Number:

PCT/IB2003/006048

(22) International Filing Date:

17 December 2003 (17.12.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/434,822

18 December 2002 (18.12.2002) US

- (71) Applicant (for all designated States except US): KONIN-KLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (71) Applicant (for AE only): U.S. PHILIPS CORPORA-TION [US/US]; 1251 Avenue of the Americas, New York, NY 10510-8001 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): OMATHUNA, Padraig [IE/US]; 1109 McKay Drive, M/S-41SJ, San Jose, CA 95131 (US).
- (74) Common Representative: KONINKLIJKE PHILIPS ELECTRONICS N.V.; c/o LESTER, Shannon, 1109 McKay Drive, M/S-41SJ, San Jose, CA 95131 (US).

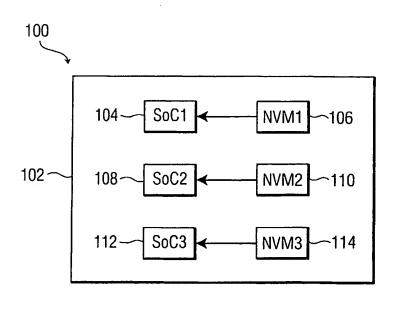
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK,

[Continued on next page]

(54) Title: CODE DOWNLOAD IN A SYSTEM HAVING MULTIPLE INTEGRATED CIRCUITS WITH JTAG CAPABILITY



(57) Abstract: An electronic product (500) including a first integrated circuit (502) coupled to a first memory (506) and at least a second integrated circuit (508, 512) coupled (516, 518, 520) to the first integrated circuit. The first integrated circuit loads information, such as a first code image, from the first memory into the first integrated circuit, and executes at least a portion of the first code image. In response to such code execution, the first integrated circuit reads information, such as a second code image, from the first memory and transmits that information to the second integrated circuit. The interface between the first and second integrated circuits for transmission of the information may be a test circuitry (522, 528, 526, 524) interface such as JTAG circuitry. In one embodiment program code is transferred from a single external memory through a first integrated circuit to one or more downstream integrated circuits by way of serially connected JTAG data and control pins.

WO 2004/055670 A3 |||||||||||||

WO 2004/055670 A3



EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report: 29 December 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

CLASSIFICATION OF SUBJECT MATTER C 7 G06F9/445 G06F G06F15/177 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 G06F H03K Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Category ° Relevant to claim No. X US 5 757 639 A (YAMADA MASANORI) 1 - 1826 May 1998 (1998-05-26) figures 1,6,7 column 1, line 34 - line 40 column 2, line 23 - line 40 column 2, line 61 - column 3, line 4 column 3, line 39 - line 46 column 4, line 39 - line 42 Α US 5 760 607 A (LEEDS KENNETH E ET AL) 1 - 182 June 1998 (1998-06-02) column 1, line 35 - line 40; figure 2 A US 6 204 687 B1 (HUNG LAWRENCE C ET AL) 14 20 March 2001 (2001-03-20) figure 4 Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: *T* later document published after the international filing date or priority date and not in conflict with the application but clted to understand the principle or theory underlying the *A* document defining the general state of the art which is not considered to be of particular relevance invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention filing date cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-*O' document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled in the art. document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 18 October 2004 28/10/2004 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016 Bosch Vivancos, P

nformation on patent family members

iational Application No/IB 03/06048

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5757639	A	26-05-1998	JP JP US US	3310990 B2 4315253 A 5552981 A 6275875 B1	06-11-1992 03-09-1996
US 5760607	A	02-06-1998	EP JP WO	0780017 A1 10505993 T 9703444 A1	09-06-1998
US 6204687	B1	20-03-2001	NONE		